

Claims

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cont.*
1. A flux-switching linear motor with at least two phases (P1, P2, P3), consisting of a moving rig comprising at least two field coils (7) each surrounding a magnetic armature (8) defining moving magnetic poles and two permanent magnets (9, 10) magnetized in opposite senses, of a guidance stator tube (1) exhibiting magnetic poles (2) disposed along the stator tube, on at least one wall of the stator tube in such a way as to be successively facing the moving magnetic poles during the travel of the moving rig, and of means for switching the sense of the current in the coils, characterized in that the permanent magnets (9, 10) are disposed outside the coils and in that they are magnetized along an axis parallel to the axis of the coil, and in that the stator magnetic poles (2) consist of pieces made of magnetic material fixed in a guidance tube made of amagnetic material, the dimension of the magnets as measured along their magnetic axis being chosen in such a way as to create narrow gaps for the movement of the magnets past the stator poles.
2. The motor as claimed in claim 1, characterized in that the pole pieces (2) constituting the stator poles are fixed pairwise, on either side of the axis of the guidance tube (1), on two opposite walls of the stator tube and in that the dimension of the magnets (9, 10) corresponds to the distance separating two opposite stator pole pieces.
3. The motor as claimed in claim 2, characterized in that the magnets of opposite polarity which relate to a phase are disposed symmetrically with respect to the plane containing the axis of the coil and a

perpendicular to the axis of the stator tube, that is to say disposed in front of and behind the coil in the direction of motion.

- 5 4. The motor as claimed in claim 2, characterized in that the magnets of opposite polarity which relate to a phase are disposed symmetrically with respect to the plane containing the axis of the coil and the axis of the stator tube.
- 10 5. The motor as claimed in one of claims 2 to 4, characterized in that the guidance tube (1) consists of a rectangular U-profile member on two opposite internal walls of which are fixed lugs or pads (2) made of magnetic material constituting the stator poles.
- 15 6. The two-phase motor with two coils as claimed in one of claims 1 to 5, characterized in that the axes of the coils are offset by a quarter or three quarters of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.
- 20 7. The three-phase motor with three coils as claimed in one of claims 1 to 5, characterized in that the axes of the coils are offset by a third or two thirds of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.
- 25 30 7. The three-phase motor with three coils as claimed in one of claims 1 to 5, characterized in that the axes of the coils are offset by a third or two thirds of a spacing relative to the stator spacing defined by the distance between the positions of two consecutive stator pole pieces.
- 35 8. The motor as claimed in one of claims 2 to 5, characterized in that the subassemblies constituting each of the phases are articulated (14) together.

9. The motor as claimed in one of claims 1 to 7, characterized in that two consecutive phases share a common magnet.

5 10. The motor as claimed in one of claims 1 to 9, characterized in that the moving rig is supplied with DC current and that the means for switching the current are mounted on the moving rig.

10 11. The motor as claimed in one of claims 1 to 10, characterized in that the moving rig contains, parallel to the axis of the coils, feedthroughs (17) made of soft ferromagnetic material.

15 12. The motor as claimed in claim 1, characterized in that the moving rig comprises a magnetic short-circuit plate made of a soft ferromagnetic material (18) disposed on the face of the moving rig parallel and opposite to the stator poles (2)  
20 in such a way as to create an image (2') of the stator poles.